

# United States Patent [19]

Mullins et al.

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[54] PYROCHEMICAL PROCESS FOR  
EXTRACTING PLUTONIUM FROM AN  
ELECTROLYTE SALT

[75] Inventors: Lawrence J. Mullins; Dana C.  
Christensen, both of Los Alamos, N.  
Mex.

[73] Assignee: The United States of America as  
represented by the United States  
Department of Energy, Washington,  
D.C.

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[51] Int. Cl.<sup>3</sup> ..... B22C 3/00

[52] U.S. Cl. .... 75/84.1 R

[58] Field of Search ..... 75/84.1

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Primary Examiner—Brooks H. Hunt

Attorney, Agent, or Firm—William A. Eklund; Paul D.  
Gaetjens; Michael F. Esposito

[57] ABSTRACT

A pyrochemical process for extracting plutonium from a plutonium-bearing salt is disclosed. The process is particularly useful in the recovery of plutonium from electrolyte salts which are left over from the electrorefining of plutonium. In accordance with the process, the plutonium-bearing salt is melted and mixed with metallic calcium. The calcium reduces ionized plutonium in the salt to plutonium metal, and also causes metallic plutonium in the salt, which is typically present as finely dispersed metallic shot, to coalesce. The reduced and coalesced plutonium separates out on the bottom of the reaction vessel as a separate metallic phase which is readily separable from the overlying salt upon cooling of the mixture. Yields of plutonium are typically on the order of 95%. The stripped salt is virtually free of plutonium and may be discarded to low-level waste storage.

4 Claims, No Drawings